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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,948	06/01/2006	Georgy Nikolaevich Vorozhtsov	GAP-PT001	3828

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EXAMINER	
MOSSER, ROBERT E	

ART UNIT	PAPER NUMBER
3714	

NOTIFICATION DATE	DELIVERY MODE
04/28/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/540,948	VOROZHTSOV ET AL.	
	Examiner	Art Unit	
	ROBERT MOSSER	3714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 June 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims **1-11** are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the use of an infrared camera operating in the range of 8-12μm, does not reasonably provide enablement for the use of an infrared camera operating in the range of 3-12μm. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

Claims **1-11** are additionally rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically while the application as originally filed provides for the use of a camera operating in the infrared range of 8-12μm it does not provide for an infrared camera operating in the range of 3-12μm, accordingly the claim amendments defining the camera as operating in the 3-12μm is new matter and requires removal from the claimed invention

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims **1-4** and **11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Marty et al (US 7,094,164) in view of Toops (US 5,206,503).

Claims **1** and **11:** Marty teaches an apparatus and method for tracking the movement of a sports object(basket ball) comprising:

recording the motion of a game object trajectories in the infrared light spectrum using an infrared camera (*Marty* Figures 1,2; Col 18:14-33);

wherein the capture is accomplished through recording a series of images (footmarks) resultant of the games interaction with the surround environment (*Marty* Figure 1; Col 18:34-52); and

analyzing the recorded series of images and infrared intensity thereof to determine the object movement parameters (*Marty* Figure 2; Col 18:34-67).

Despite teaching the incorporation of an infrared camera above Marty is silent regarding specifically operating the camera in the infrared range of 3-12μm. In a related infrared imaging device Toops teaches that it was known at the time of invention to tune infrared detector devices (including cameras) to the 3-5μm and 8-12μm infrared radiation bands (*Toops* Col 10:11-17; Elements 60, 94; Claims 1 & 3-5). It would have been obvious to one of ordinary skill in the art at the time of invention to have optimized the infrared camera of Marty to specific to the 3-5μm and 8-12μm infrared radiation bands as taught by Toops in order to remove the undesired radiation bands from obscuring the infrared image detected by the camera.

Claim **2:** In the combination of Marty & Toops, Marty teaches the detection of sports objects in multiple spectrum ranges through both recognizing varying intensities in the infrared spectrum and the incorporation of cameras suitable for capturing the Infrared spectrum and in addition thereto the visual spectrum (*Marty* Col 18:16-21, 18:34-36).

Claim **3:** In the combination of Marty & Toops, Marty teaches an apparatus and method for tracking the movement of a sports object as set forth above including the recognizing the placement of objects that are not the sports object placed both between the camera and the sports object and objects placed beyond the sports object and the camera (Col 9:33-42) and the use of infrared illumination

intensity to determine the position of the game object as cited above. The above cited claim uses the term "shadow" to describe the difference in appearance of a game object that is perceived by a infrared camera when illuminated from a location opposite the camera and behind the game object as understood from the applicant's specification. While Marty does not explicitly describe the use of game object shadow in determining the position of the game object, the described consideration of game object shadow is understood as inherent to the detection of the game object for any point where the object has a lower infrared signature then the background of the object wherein without such consideration the system of Marty would be incapable of functioning as disclosed to separate the game object from the surrounding environment (Marty Col 9:33-42). Alternatively, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the recognition and utilization of game object shadows in the invention of Marty to distinguish the movement of the game object from the secondary objects present in the camera image as taught by Marty and cited above.

Claim **4:** In the combination of Marty & Toops, Marty teaches an apparatus and method for tracking the movement of a sports object as set forth above including the recognizing the change in game object direction resultant of game object interactions (10:49-53, 17:28-43) however Marty does not explicitly describe the recognized change in game object direction as a "break of trajectories" the

detection and identification of game interactions provided for in Marty is understood as an equivalent means for determining the change in game object path as claimed. Alternatively, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a "break of trajectories" detection in the invention of Marty in order to provide a means to detect a change in object direction as taught by Marty and cited above.

Claims **5, 6,** and **10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Marty et al (US 7,094,164) in view of Toops (US 5,206,503) in further view of Lowy et al (US 5,768,151).

Claim **5:** In the combination of Marty & Toops, Marty teaches the incorporation of a computer (*Marty* element 116) and a "mechanical oscillation receiver"/microphone (*Marty* Col 23:59-63). The combination of Marty & Toops is silent regarding the intended use of the microphone of Marty to run and stop the camera however Lowy teaches that it was known at the time of invention to utilize sound detected by microphone to trigger a camera (Lowy Col 2:33-39; 5:24-37). It would have been obvious to one of ordinary skill in the art at the time of invention to have utilized the microphone as a camera trigger device to activate the camera as taught by Lowy in the combination of Marty & Toops in

order to isolate the captured image frames to those containing usable image data.

Claim **6:** In the combination of Marty & Toops, Marty teaches the incorporation of external infrared light sources (*Marty* Element 164, Col 18:14-16).

Claim **10:** In the combination of Marty & Toops,, Marty teaches the incorporation of optical filters for modifying the infrared sensitivity of the attached camera (*Marty* Col 18:17-21).

Claim **7** and **8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Marty et al (US 7,094,164) in view of Toops (US 5,206,503) in further view of Lowy et al (US 5,768,151) as applied to at least claim **5, 6,** and **10** above and in yet further in view of Chang et al (US 5,342,054).

The combination of Marty, Toops, & Lowy, teaches the invention including the elements of infrared cameras and lights including the modulation of infrared through the use of filters as presented above however, the combination is silent regard the element of synchronizing of the lights and cameras. In a related sports tracking device employing infrared cameras and lights, Chang teaches synchronizing the lights and camera to provide a fixed time of imaging/ snapshot (*Chang* Col 6:3-12). It would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated synchronizing the lights and camera

to provide a fixed snapshots as taught by Chang into the combination of Marty, Toops, & Lowy in order to increase the energy efficiency of the invention of Marty through only activating the infrared light sources while the infrared image data is being captured.

Claim **9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Marty et al (US 7,094,164) in view of Toops (US 5,206,503) in further view of Lowy et al (US 5,768,151) as applied to claims **5, 6,** and **10** above and in yet further in view of Sieber et al (US 5,231,483).

In the combination of Marty, Toops, & Lowy, Marty teaches the invention incorporating a mechanical oscillation receiver/microphone as presented above and further including the ability to change the area of the camera's focus (*Marty* Col 10:54-62), Marty however is silent regarding the inclusion of an appliance with the camera effective to enable the rotation and movement synchronized with the mechanical oscillation receiver/microphone as claimed. In a related camera system, Sieber teaches the utilization of a mechanical oscillation receiver with a camera wherein the cameras rotation and movement are synchronized to the mechanical oscillation receiver and signals perceived thereby (*Sieber* Figures 1,2; Col 3:11-17, 3:39-52). It would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated the camera tracking ability of Sieber into the combination of Marty, Toops, & Lowy in order to provide a

manner for a singular camera to cover multiple game zones without a loss in game object perspective associated with panning/zooming out.

Response to Arguments

Applicant's arguments with respect to claims **1-11** have been considered but are moot in view of the new ground(s) of rejection.

The previous rejection of claims under 35 U.S.C. 112 second paragraph has been overcome through amendment however, the amendment of claims has introduced a new rejection under 35 U.S.C. 112 first paragraph as presented herein above.

The rejection of claims under 35 U.S.C. 101 has been overcome through amendment.

On pages 8 through 12, the applicant argues that the prior art alone or in combination fails to teach the utilization of an infrared camera operating in the 3-12 micrometer range. The applicant further argues that the prior art of Marty would be limited to utilizing a spectrum in the 800-900 nanometer range. Upon review of Marty the applicant's characterization of Marty is not supported by the disclosure of Marty. Further the specific optimization of a infrared camera to operate within the 3-12 micrometer range has been provided for by the prior art reference of Toops as incorporated in the rejections above.

Continuing the applicant presents an interpretation of the claims, directed to limiting the image data utilized to an infrared footmark generated resultant of a heat transfer between a game object (ball) and the environment thereof. With regards to

this feature as claimed, Marty teaches tracking game objects through the radiation of infrared spectrum energy as it is transferred through the surrounding environment creating a footmark therewith.

With specific regards to claim 5 the applicant presents that the claim as amended provides for the selective activation of the camera and system responsive to the detection of sound by the mechanical oscillator. The rejection as presented herein above addresses this feature of activating a camera responsive to the detection of sound by a mechanical oscillator as taught by Lowy.

The remainder of the applicant's arguments are based on those redressed above and considered redressed therewith.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT MOSSER whose telephone number is (571)272-4451. The examiner can normally be reached on 8:30-4:30 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Lewis can be reached on (571) 272-7673. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. M./
Examiner, Art Unit 3714
/David L Lewis/
Supervisory Patent Examiner, Art Unit 3714